DP-310113

CLAIMS

What is claimed is:

1. A power supply, comprising:

a solid oxide fuel cell system for providing a first source of power, said solid oxide fuel cell system producing heat waste; and

a thermo photovoltaic device for providing a second source of power, said thermo photovoltaic device providing said second source of power from said heat waste which is provided to a combustor for further heating.

2. The power supply as in claim 1, wherein said heat waste is heated air and an exhaust conduit provides fluid communication of said heat waste between an exhaust of said fuel cell system and an inlet of said combustor.

3. The power supply as in claim 2, wherein unused fuel of said fuel cell system is provided to said combustor for use in heating said heat waste.

4. The power supply as in claim 1, wherein unused fuel of said fuel cell system is provided to said combustor for use in heating said heat waste.

5. The power supply as in claim 1, wherein a heat exchanger is configured to cool at least one photocell of said thermo photovoltaic device, wherein an exhaust of said heat exchanger is provided to said fuel cell system.

6. The power supply as in claim 5, wherein said power supply is configured for use in a vehicle or in any power generation system.

7. The power supply as in claim 6, further comprising a power conditioner for receiving and conditioning power generated by said fuel cell system and said thermo photovoltaic device.

8. The power supply as in claim 1, wherein said fuel cell system comprises a plurality of fuel cell stacks providing heat waste to a plurality of thermo photovoltaic devices.

9. The power supply as in claim 1, wherein a heat exchanger of said plurality of thermo photovoltaic devices provides an exhaust to an inlet conduit of said fuel cell system.

10. The power supply as in claim 3, where said heat waste of said solid oxide fuel cell system is within a range defined by a lower limit of 400 degrees Celsius and an upper limit of 1,200 degrees Celsius when said solid oxide fuel cell system is providing said first source of power.

11. The power supply as in claim 1, further comprising a heat exchanger, said heat exchanger providing an inlet and an exhaust of air to at least one photocell of said thermo photovoltaic device, wherein unheated air is supplied to said inlet and air heated by said photocell is supplied to said exhaust, wherein said photocell is maintained at a temperature differential between an emitter of said thermo photovoltaic device.

12. The power supply as in claim 1, wherein said thermo photovoltaic device and said combustor provide an initial source of power during a warm up phase of said fuel cell system, said warm up phase being the time necessary to bring said fuel cell system from a non-power producing configuration to a power producing configuration.

13. The power supply as in claim 12, further comprising a heat exchanger, said heat exchanger providing an inlet and an exhaust of air to at least one photocell of said thermo photovoltaic device, wherein unheated air is supplied to said inlet and air heated by said photocell is supplied to said exhaust, wherein said photocell is maintained at a temperature differential between an emitter of said thermo photovoltaic device; and

a controller employing a control algorithm for controlling the operation of said fuel cell system, said combustor, and said thermo photovoltaic device in response to signals received from said fuel cell system, said combustor, and said thermo photovoltaic device, said signals at least corresponding to the operational temperature of said fuel cell system, said combustor, said thermo photovoltaic device and heat exhaust thereof.

14. The power supply as in claim 1, wherein said heat waste is generated before, during and after said fuel cell system is generating said first source of power.

15. A method for generating power, comprising:

generating power from a thermo photovoltaic device, said thermo photovoltaic device generating power from heat received from a combustor under a first operating condition; and

generating power from a solid oxide fuel system, said solid oxide fuel system generating a heat exhaust, said heat exhaust being routed to said combustor, wherein said thermo photovoltaic device generates power from the heat exhaust from said combustor when said heat exhaust is heated by said combustor to a predetermined temperature for energy conversion by said thermo photovoltaic device.

16. The method as in claim 15, wherein said heat exhaust is provided to said combustor via an exhaust conduit, said exhaust conduit providing fluid

communication of said heat exhaust between an exhaust of said solid oxide fuel cell system and an inlet of said combustor.

17. The method as in claim 15, wherein unused fuel of said solid oxide fuel cell system is provided to said combustor for use in heating said heat exhaust to said predetermined temperature.

18. The method as in claim 17, further comprising:

cooling at least one photocell of said thermo photovoltaic device by a heat exchanger, wherein an exhaust of said heat exchanger is provided to said fuel cell system.

19. The method as in claim 15, wherein said heat exhaust of said solid oxide fuel cell system is within a range defined by a lower limit of 400 degrees Celsius and an upper limit of 1,200 degrees Celsius when said solid oxide fuel cell system is providing said first source of power.

20. The method as in claim 15, wherein said heat exhaust is generated before, during and after said solid oxide fuel cell system is generating said first source of power.